

Management Indicator Assemblage Report – Wildlife

Roads and Plantations Pilot Project

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Executive Summary

The Roads and Plantations Pilot Project Wildlife Management Indicator Assemblage (MIA) Report analyzes the effects of proposed treatments on the management indicator assemblage habitat identified in the Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan, USDA Forest Service 1995). For all alternatives, including the proposed action, there will be no effect to the Multi-habitat or Cliffs, Caves, Talus, and Rock Outcrops management indicator assemblages. Proposed activities will affect the Openings and Early Seral, Late Seral, Snag and Down Log, Riparian, Hardwood, and Chaparral management indicator assemblages. The proposed action will not convert any MIA to another assemblage, and the acres in each assemblage will remain the same. Therefore, potential effects of the proposed action will be qualitative, not quantitative. Proposed activities will have no measurable influence on Forest-level trends for any management indicator assemblage habitat or species.

Forest Plan Direction

The Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan) provides direction for forest-scale management indicator assemblage (MIA) monitoring (USDA Forest Service 1995 page 5-16). Management indicator assemblages are vegetative communities or key habitat components associated with groups of wildlife identified in the Forest Plan (page 3-24). The habitat components of the assemblages are categorized and defined using the California Wildlife Habitat Relationship (CWHR) System (CDFG 2008). The Forest Plan permits the use of habitat components to represent the management indicator assemblages. Therefore, habitat status and trend is monitored at the Forest scale but population monitoring is not required. Project-level effects on management indicator assemblages are analyzed and disclosed as part of the environmental analysis under the National Environmental Policy Act. Project level reports analyze the quantitative and/or qualitative effects of a project on the habitat of each potentially affected management indicator assemblage and describe how these effects to habitat may influence Forest-level trends.

Project Description

The Forest Service is proposing to treat approximately 4,000 acres along approximately 40 miles of roads open to the public. The proposed action includes thinning activities in three areas: existing plantations, around treated plantations (plantation buffer), and along the two roads in the project area (roadside buffer). The treatments in the plantation buffer and roadside buffer are the same. The roadside and plantation buffers would be 300 feet total width (not including the width of the system road, shoulder to shoulder) and would be adjacent to the Indian Valley (2N10) and Butter Meadows (3N08) roads, and 300 feet around the plantations that intersect the roadside treatment area. Width of the treatment area on either side of the road will vary, but will not exceed 300 feet total width (e.g. if conditions lend to a wider treatment on the uphill side, the uphill side may be treated up to 275 feet from the road and the downhill side would be treated 25 feet from the road). Fuel reduction treatments can occur within the entire buffer. Trees that are determined to be hazards will be felled. Tree hazards include dead or dying trees, dead parts of live trees, or unstable live trees (due to structural defects or other factors) that are within striking distance of people or property (a target). Hazard trees that are felled can be removed (and utilized).

The project's connected actions (primarily road maintenance/reconstruction and decommissioning, landing construction and access ramps, control line construction, and legacy sediment site restoration) will mainly occur in existing roadbeds and culvert sites. These sites have been highly disturbed, and contain little or no MIA habitat and have little or no potential value to any MIA wildlife species. The locations of landings and control lines are unknown. However, due to their very small and/or narrow size, they are likely to have a very limited effect on habitat functionality for any species. Ground disturbance at sites outside the treatment units is so limited in spatial extent that these spots were excluded from detailed analysis.

For a more detailed description of the Proposed Action (Alternative 2), treatment methods and all project alternatives, see the Environmental Assessment (USDA Forest Service 2021).

Alternative 3

This alternative would occur within the same boundaries and have the same treatments as the Proposed Action (Alternative 2); however, there would be no machine piling or mastication anywhere, no use of dozers for control line preparation anywhere, and no mechanical equipment use in Riparian Reserve (RR) land allocations.

Alternative 4

This alternative would occur within the same boundaries as the Proposed Action (Alternative 2); however, no trees with diameter at breast height (DBH) greater than 18 inches would be cut in the buffers, unless it is a hazard. Snags greater than 18 inches DBH would be retained in LSR and RR when not deemed a hazard to roads, landings, or operations. Snags that are determined to be hazards will be felled.

The prescriptions in the areas along roads and around plantations for this alternative are different than Alternative 2. The prescription in all buffers would thin smaller trees (“thin from below”) up to the 18-inch diameter limit. The prescriptions for plantations will be the same as described in Alternative 2.

Project Effects on Management Indicator Assemblage Habitats

Proposed project activities for all alternatives, including the proposed action, will affect six of the eight wildlife management indicator assemblages: Openings and Early Seral, Late Seral, Snag and Down Log, Riparian, Hardwood, and Chaparral. There will be no effect to the Multi-habitat or Cliffs, Caves, Talus, and Rock Outcrops management indicator assemblages. The effects of the project on the quantity (acres of habitat available) and quality of each assemblage habitat (in relation to their representative species) were analyzed and described below. Qualitative factors for the openings/early seral, late seral, hardwood, and riparian assemblages include effects to tree size class and canopy cover. Qualitative factors for the chaparral assemblage include effects to shrub size class and shrub density. Qualitative factors for the snag/down log assemblage include effects to the density of snags and/or down logs. Table 1 summarizes the pre- and post-treatment assemblage acres.

Table 1. Summary of pre- and post-treatment management indicator assemblage habitat acres within the Pilot project units for all Alternatives including the Proposed Action (Alternative 2).¹

Assemblage ²	Representative Species	Pre-treatment Habitat Acres (No Action)	Post Treatment Habitat Acres	Change in Habitat Acres
Openings and Early Seral	Nashville warbler	3,097	3,097	0
Late Seral	brown creeper	917	917	0
Hardwood	white-breasted nuthatch	7	7	0
Chaparral	wrentit	3	3	0
Snag and Down Log ³	red-breasted nuthatch	4,021	4,021	0
Total		4,024	4,024	0

As shown in Table 1, no assemblages will be removed or converted into another assemblage as a result of proposed activities, under any alternative. All assemblages will continue to provide the same quantity and distribution of these assemblage types after the project is implemented. Although the potential effects to assemblage habitat will not be quantitative, qualitative effects will occur, as described below.

¹ The late seral and openings and early seral assemblages for this analysis are defined by management indicator assemblage definitions, so acreages may differ from late seral and early seral habitat in other analyses/reports.

² The riparian assemblage (representative species=yellow warbler) overlaps with other assemblages and is not being impacted independently of the larger assemblages that it is a component of. Therefore, acres of riparian assemblage habitat were not quantified.

³ The snag and down log assemblage overlaps with all other assemblages, except for chaparral.

Late Seral and Openings/Early Seral Assemblages

Proposed Action (Alternative 2)

Within the **late seral** and **early seral/openings** assemblages, canopy cover will be reduced by project activities, particularly thinning. However, stands will be thinned in a manner to retain the best, healthiest trees that have a high canopy capacity (those with the strongest crown to bole ratio, have the highest needle or leaf cover and provide the most shade to the forest floor). Average diameter at breast height (DBH) of trees may change as a result of treatments, likely increasing in areas where treatments target smaller trees and reduce overcrowding and competition for light and water. However, treatments will not result in a change in assemblage type because these assemblage habitats include all canopy cover classes and all tree size classes.

Although the treated stands will be more open and less densely stocked with trees they will continue to provide habitat for the species associated with early and late seral stands, including the Nashville warbler, an early seral species, and the brown creeper, a late seral species. In the short-term, the number of acres of early seral and late seral assemblage habitats will remain unchanged. Over the long-term, plantations and other early seral assemblage areas will likely develop late seral characteristics. In addition, late seral and early seral assemblage habitats will become more resilient to wildfire and insect/disease outbreaks, thus treatments will help protect these habitats in the long term.

Comparison with Alternatives

The effects of **Alternative 3** on **late seral** habitat components and quality such as canopy cover, large trees and tree size class will be similar (if not the same) to those of the Proposed Action and the same number of acres will be affected. However, due to the limitations on mechanical equipment in this alternative, treatments will cause less intense ground disturbance, and likely impact less understory vegetation. Thus, impacts to the quality of **early seral/openings** assemblage habitat will likely be less than the Proposed Action. However, the potential for late seral and early seral habitat loss due to high-intensity wildfire and/or insect/disease outbreaks will likely be higher under Alternative 3 because fuels treatments may be less effective at reducing the fire risk.

The effects of **Alternative 4** on the early seral and late seral assemblages will be similar to those of the Proposed Action and the same number of acres will be treated. However, due to the 18-inch diameter limit in the buffers the effects to habitat components and quality such as canopy cover, large trees and tree size class in **late seral** and **early seral/openings** MIAs would be less under Alternative 4 when compared to the Proposed Action. However, the potential for late seral and early seral habitat loss due to high-intensity wildfire and/or insect/disease outbreaks will be higher under Alternative 4 because trees will be more crowded and fuels treatments may be less effective at reducing the fire risk.

Hardwood Assemblage

Proposed Action (Alternative 2)

Within the **hardwood assemblage**, canopy cover may decrease slightly due to treatments but a change in tree size class is not expected. In oak woodlands, all oaks would be retained. Multi-stemmed oaks will be thinned down to 1 to 3 stems, depending on size. All conifers will be removed from oak-dominated areas, except dominant and predominant trees (these are generally exceeding 24 inches in diameter). Therefore, these treatments will improve the quality of hardwood assemblages. In brush fields, hardwoods less than 6 feet tall will be considered brush and may be thinned accordingly. Residual hardwoods may be cultured to 1 – 3 dominant stems and pruned up to a height of 8 feet or half of the live crown.

Treatments will not result in a change in the number of acres of hardwood assemblage habitat or conversion into another assemblage because the hardwood assemblage includes all canopy cover classes, all hardwood tree size classes, and all densities of hardwood trees. Although the treated stands may be slightly more open they will be more vigorous and habitat quality is expected to increase for the species associated with hardwood habitat (including white-breasted nuthatch). In addition, treated stands will become more resilient to wildfire and insect/disease outbreaks, thus treatments will help protect the hardwood assemblage in the long term.

Comparison with Alternatives

The effects of **Alternative 3** on the hardwood assemblage will be about the same as those of the Proposed Action and the same number of acres will be affected. The effects to habitat components and quality such as hardwood canopy cover and tree size class would be very similar, if not the same, as the Proposed Action because hardwoods would be retained in all alternatives. Treatments in Alternative 3 will cause less intense ground disturbance, and likely impact less understory vegetation due to the limitations on mechanical equipment. However, the use of mechanical equipment is not expected to have an impact on hardwood canopy cover or tree size class. The potential for hardwood habitat loss due to high-intensity wildfire and/or insect/disease outbreaks will likely be higher under Alternative 3 because fuels treatments may be less effective.

The effects of **Alternative 4** on the hardwood assemblage will be about the same as those of the Proposed Action and the same number of acres will be affected. The effects to habitat components and quality such as hardwood canopy cover and tree size class would be the same as the Proposed Action because hardwoods would be retained in all alternatives. In Alternative 4, only conifers less than 18 inch diameter would be removed from oak woodlands, while under the Proposed Action all conifers would be removed, except dominant and predominant trees (these are generally exceeding 24 inches in diameter). Therefore, fewer conifer trees would likely be removed from oak woodlands under Alternative 4. Thus, treatments will not improve the quality of the hardwood assemblage as much, and would potentially result in a shift towards dominance of conifers in the long term. In addition, the potential for hardwood habitat loss due to high-intensity wildfire and/or insect/disease outbreaks may be higher under Alternative 4 because trees will be more crowded.

Chaparral Assemblage

Proposed Action (Alternative 2)

Within the **chaparral assemblage**, shrub density will decrease as a result of the project. In persistent brush fields, brush will be thinned to retain clumps of brush (or individual shrubs) up to 10 feet in diameter spaced 20 - 30 feet apart. Shrub/clump spacing distance will increase with slope. All brush will be removed from under the branches of leave trees. Any pockets of small conifers (less than 8 inches DBH) may be thinned to the Upland Pine Stand (UPS) prescription (see EA for description). Conifers over 8 inch DBH will not be removed but any trees within brush fields will be pruned to a maximum of 8 feet from the ground or no more than half of the live crown. Hardwoods less than 6 feet tall will be considered brush and may be thinned accordingly. Residual hardwoods may be cultured to 1 – 3 dominant stems and pruned up to 8 feet or half of the live crown.

Treatments will not result in a change in the number of acres of chaparral assemblage habitat or conversion into another assemblage because the chaparral assemblage includes all shrub size classes and shrub densities. Although the treated stands will be more open they will continue to provide habitat for the species associated with chaparral habitat (including wrentit). In addition, interspaces between clumps of chaparral will make residual stands more resistant to extirpation by fire, and remain a more persistent habitat type as a result of the proposed action.

Comparison with Alternatives

The short-term effects of **Alternative 3** on the chaparral assemblage will be less than the Proposed Action but the same number of acres will be treated. Due to the limitations on mechanical equipment, treatments in Alternative 3 will cause less intense ground disturbance, and impact less understory vegetation, including chaparral and other shrub species. In the long-term, the potential for chaparral habitat loss due to high-intensity wildfire will likely be higher under Alternative 3 because fuels treatments may be less effective at reducing the spread of fire through more contiguous stands of chaparral and other surface vegetation, potentially resulting in the loss of this assemblage in all or part of the project area.

In the short term, the effects of **Alternative 4** on the chaparral assemblage will be about the same as the effects of the Proposed Action and the same number of acres will be treated. In Alternative 4, there is an 18 inch diameter limit in the buffers, however, in brush fields only conifers less than 8 inches DBH will be removed, regardless of alternative. Therefore, the effects to habitat components and quality such as shrub density and size would be the same as the Proposed Action because treatments in brush fields will be the same as described above under the Proposed Action section. However, fewer conifer trees would be removed from stands adjacent to shrub fields; therefore in the long term, the potential for chaparral habitat loss due to high-intensity wildfire may be higher under Alternative 4 because trees in adjacent areas will be more crowded.

Snag and Down Log Assemblage

Proposed Action (Alternative 2)

The **snag and down log** assemblage is defined as conifer and hardwood habitats with substantial snags and down logs. Therefore, the snags and down logs assemblage overlaps with all of the other assemblages, except for chaparral. Within the snag and down log assemblage, snag and down log densities will decrease as a result of the project. However, the project's resource protection measures (RPMs) include retention of specified levels of coarse woody debris (CWD). Where it is available and will not cause a safety concern for implementation, an average of at least 15 tons per acre of large wood in the form of logs (greater than 20 inches diameter and 10 feet long) and snags (15 inches or greater in diameter) will be retained, to the greatest extent possible, for wildlife benefit. Logs and snags in advanced states of decay (decay classes 3-5) and those with deformities such as cat faces, broken or forked tops, hollows or cavities will be prioritized for retention (USDA Forest Service 2020).

The snag and down log assemblage overlaps with the late- and early-seral/openings and the hardwood assemblages that contribute woody debris to the ecosystem. With the proposed CWD protection measures, snags and down logs will continue to persist in various densities across the project area. Therefore, the project will not decrease the number of acres of this assemblage. Treated stands will have fewer snags and down logs, but the largest and most valuable snags and logs retained will continue to provide habitat for species associated with the snag and down log assemblage (including red-breasted nuthatch) and the risk of stand-replacing fire will be less likely in the short- and the long-term. In the long term, more large snags (and subsequently down logs) will be recruited overtime.

Comparison with Alternatives

The effects of **Alternative 3** on the snag and down log assemblage will be slightly less than the Proposed Action in the short term, but the same number of acres will be treated. Treatments will cause less intense ground disturbance, and likely impact less understory vegetation and CWD (logs) due to the limitations on mechanical equipment in this alternative. However, the project's RPMs include retention of specified levels of CWD. Impacts to snags would be the same and mechanical equipment is not likely to impact large logs that qualify as CWD. The potential for high-intensity wildfire and/or insect/disease outbreaks will likely be higher under Alternative 3 because fuels treatments may be less effective and would, in the long term, result in more snags and down logs being added to the landscape.

The effects of **Alternative 4** on the snag and down log assemblage will be less than the Proposed Action but the same number of acres will be affected. Snags greater than 18 inches DBH would be retained in LSR and RR when not deemed a hazard to roads, landings, or operations. Therefore, more snags would be retained under Alternative 4 (less impacts to snag density). Due to the 18-inch diameter limit in the buffers, the potential for high-intensity wildfire and/or insect/disease outbreaks will likely be higher under Alternative 4 because trees will be more crowded, and would, in the long-term, result in more snags and down logs on the landscape at the expense of the live assemblages that may be extirpated in a severe fire event.

Riparian Assemblage

Proposed Action (Alternative 2)

The **riparian** assemblage occurs in very narrow strips along waterbodies. It overlaps with the other assemblages (most often in the understory of late seral or early seral stands), and includes trees in all size classes and a wide range of canopy cover conditions. Within the riparian assemblage, riparian tree size class and canopy cover will not be changed as a result of this project. The project is designed to minimize treatments in Riparian Reserves (RRs), which is a large buffer within which the riparian assemblage would occur. Within RRs, all true-riparian vegetation will be retained. Outside of plantations, all conifer trees over 8 inches DBH will also be retained in RRs. Extensive resource protection measures (RPMs) for RRs will avoid potential effects to this assemblage habitat. Within RRs, equipment exclusion zones (EEZs) will be utilized to avoid impacts to riparian vegetation, soils, and to retain trees necessary for shading and bank stabilization. EEZs will be at least 50 feet on each side of streams, which would encompass all riparian assemblage habitat (USDA Forest Service 2020). The only treatment type that may impact riparian vegetation is prescribed fire. However, within RRs, fire will mostly be low intensity and is not expected to completely remove riparian vegetation or impact canopy cover. Treatments will not result in a change in the number of acres of riparian assemblage habitat or conversion into another assemblage. Treated stands will continue to provide habitat for the species associated with riparian habitat (including yellow warbler).

Comparison with Alternatives

The effects of **Alternative 3** on the riparian assemblage will be about the same as the Proposed Action and the same number of acres will be affected. The RPMs described above protect riparian habitats under all alternatives. However, the potential for riparian habitat loss due to high-intensity wildfire and/or insect/disease outbreaks will likely be higher under Alternative 3 because fuels treatments may be less effective in reducing the fire risk.

The effects of **Alternative 4** on the riparian assemblage will be about the same as the Proposed Action and the same number of acres will be affected. The RPMs described above protect riparian habitats under all alternatives. However, the potential for riparian habitat loss due to high-intensity wildfire and/or insect/disease outbreaks may be higher under Alternative 4 because trees will be more crowded.

Effects of No Action Alternative on All Assemblages

Under the **No Action Alternative**, no areas will be treated. Trees and vegetation will continue to grow and fuel loading will continue to increase without human influence, and the project objectives of improving forest health and resilience and reducing fuels will not be met. The current vegetation trends in the project area that are described in detail in the EA would continue under this alternative. Trees would be more crowded, increasing competition for limited resources including water and sunlight, and over the long term, late seral conditions (larger trees) would be slower to develop. Continued or increased mortality of crowded/stressed trees would result in creation of snags and/or downed wood; however, many of those would be small in diameter (and thus not as valuable for wildlife) and the result would be increased fuel loading. Long-term effects of this alternative on MIA wildlife species and their habitat

include a higher risk of widespread and severe impacts to suitable habitats from high-severity wildfire and insect/disease outbreaks. Continued limitations on use of the existing road system for wildfire suppression due to safety concerns will limit the ability to prevent loss of assemblages in the project area due to fire.

Conclusion

In the long term, the project would promote increased growth and vigor of remaining trees, and improve overall stand health by reducing competition for limited resources, including water. Treatments are designed to create ecological conditions that are more resilient to insect and disease outbreaks and wildfire. Therefore, treatments will help protect and improve the quality of all management indicator assemblage habitat in the long term.

Due to the small scale of this project, even if potential effects are realized, these effects will not meaningfully influence Forest level habitat trends for any of the management indicator assemblages. The project will not cause a measurable change to population trends or habitat availability for the species associated with these habitat assemblages. There is no change in type or in acres for any MIA habitat from the project, so there will not be cumulative effects on any of the assemblage habitats due to this project.

References

- CDFG (California Department of Fish and Game). 2008. California Department of Fish and Game and California Interagency Wildlife Task Group. California Wildlife Habitat Relationships (CWHR) version 8.2 personal computer program. Sacramento, California. Accessed from: <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.asp>.
- USDA Forest Service. 1995. Shasta Trinity National Forest Land and Resource Management Plan. Shasta-Trinity National Forests, Redding, California.
- USDA Forest Service. 2021. Pilot Roads and Plantations Project Environmental Assessment. Shasta Trinity National Forests, Redding, California.